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ABSTRACT

In this study social indicators and survey measures were used to predict three-year service utilization rates at a community mental health center on a geographic basis. Ten social indicators were selected from available census tract statistics and seven survey measures were taken from an epidemiological survey of the catchment area of the mental health center. These data were analyzed first with univariate analyses of variance and then with step-wise rates. The results showed that mental health utilization rates can be predicted with considerable accuracy by social indicators and survey measures. Combining survey measures and social indicators provided the greatest accuracy; social indicators alone were shown to be more powerful predictors than survey measures alone. Survey measures may be particularly valuable in identifying the special problems of community members, while social indicators provide clues about which geographic areas may have problems. (Author)

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The Assessment of a Community's Mental Health Needs

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Running head: Needs Assessment

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Abstract

In this study social indicators and survey measures were used to predict three-year service utilization rates at a community mental health center on a geographic basis. Ten social indicators were selected from available census tract statistics and seven survey measures were taken from an epidemiological survey of the catchment area of the mental health center. These data were analyzed first with univariate analyses of variance and then with step-wise rates. The results showed that mental health utilization rates can be predicted with considerable accuracy by social indicators and survey measures. Combining survey measures and social indicators provided the greatest accuracy; social indicators alone were shown to be more powerful predictors than survey measures alone. Survey measures may be particularly valuable in identifying the special problems of community members, while social indicators provide clues about which geographic areas may have problems.

The Assessment of a Community's Mental Health Needs

People in communities have mental health needs (Bradburn, 1969) and when these needs are not met they may seek help from the community mental health center. Recently, it has been proposed that the mental health needs of communities can be assessed and used in planning services (Blum, 1975; Siegel Atkisson, & Cohn, 1974; Warheit, Bell, & Schwab,1974). The range of mental health problems in an area can be discovered, high risk groups identified, and the identification of the problems in an area can be used to gage the urgency of need, suggest interventive and preventive programs, and facilitate changes in public mental health staffing, services, budgets or locations. Furthermore, an implicit advantage of needs assessment is that it allows the community to "look at itself" (Blum, 1975).

Measures of community need can be characterized as either "objective" or "subjective." Objectives measures describe characteristics, behaviors or events in communities and are often reported through government agencies, while subjective measures of communities consider the feelings, needs, perceptions and personalities of the individuals in the community (Campbell, 1976). Objective measures of community need include social indicators such as rates under treatment, crime statistics, levels of social, economic, educational and racial status, and measures of community stability. These measures can be conceived of as the social forces acting on individual members of communities. Subjective community measures are concerned with well-being, happiness, life satisfaction, psychological problems, and life stress; these can be conceived as the psychological forces within communities.

Rates under treatment have been suggested as an objective indicator of

ne[illegible] however, differential utilization rates may be due to publicity, low cost o[illegible]ailability of competing services, etc. (Siegel et al., 1974). Social indicators with greater face validity for assessing needs for mental health services are available from the National Institute of Mental Health (Rosen, Lawrence, Goldsmith, Windle, & Thornbaugh, 1975). Using data from the 1970 Census, these indicators identify areas which are subjected to social forces such as low socioeconomic status, family disruption, and community instability, pinpointing geographic areas with potentially high social stress (cf. Stewart & Poaster, 1975). McWilliams (1975) constructed a composite of seven social indicators on a census tract basis and then correlated this composite with admissions to a mental health center, finding a highly significant association. Also, Bloom (1976) identified four social factors from census and other social indicators that predicted geographically differential admission to psychiatric facilities in Pueblo, Colorado: socioeconomic affluence, young marrieds, social isolation and social disequilibrium. There seem to be some important limitations to the use of social indicators, however. The data from the 1970 census may not be relevant to communities which have changed rapidly since the data was collected, and although social indicators may identify high risk areas, whether high risk individuals from those areas actually need services is open to question. Indicators may help to identify areas subject to inequitably distributed social forces, but they may not provide information about community psychological reactions to these social forces.

To remedy the weaknesses of social indicators, Campbell (1976) and others have proposed the use of "subjective" or psychological measures in accounting for social problems. With these "subjective" data, Schwab, Warheit and Fennell (1975) compared felt need for mental health services with actual reported use of services; they found an under-utilization of services for black,

older, and non-affluent respondents. Zautra (1975) identified "quality of life" factors reflecting life satisfactions (personal, family, and economic) and community participation (family, work, religious and social) which were important determinants of how people felt about their lives and whether they requested professional help for "problems in living". Measurement of these psychological forces within communities may help to identify the particular problems and target groups for mental health intervention. Surveys, however, are subject to problems of interviewer bias, sampling error and unreliability (Warheit et al., 1974), and sample sizes in psychological surveys tend to be too small for detailed geographic analysis of results.

The most thorough model of community need may require an assessment of both social and psychological forces. The mental health needs of communities may be best predicted by mapping the distribution of these forces within community boundaries. This model assumes that both social and psychological measures are valid indicators of need and they validate each other by providing complementary perspectives on needs in different communities. The present investigation used social indicators reflecting socioeconomic and educational status, community and family instability and ethnicity and survey measures of life quality, affect, psychiatric symptoms, religious, social and family participation. These measures were jointly employed to determine the best predictors of service utilization rates at a community mental health center.

Method

Observations

The census tract was the primary unit of analysis for this study. Data were collected for each of 26 census tracts within the primarily suburban

catchment area of the Granite Community Mental Health Center (population approximately 215,000). These census tracts were designed to represent distinct geographic areas with uniform population characteristics, economic status and living conditions (United States Department of Commerce, 1971), and their populations range from 1,385 to 14,044 residents.

Service Utilization

Service utilization was the criterion variable for this study and was defined as the admission for any direct treatment service at the center. Rates of usage were computed per 1,000 residents for the 26 census tracts for a three-year period from 1973 to 1975 to insure that the rates were stable indicators of service utilization. The three-year rates varied from 14.12 to 191.5 admissions per 1,000 residents across census tracts.

Social Indicators

Social forces acting on communities were indexed using data provided by the National Institute of Mental Health Mental Health Demographic Profile System (MHDPS) (Rosen et al., 1975), which provides 108 selected statistics computed for each census tract. Census population sampling ranged from 5 percent to 100 percent of the residences depending on the measure. Social indicators were selected for this study from the MHDPS using the following criteria. First, indicators were selected which had been proposed as measures of social needs in previous studies (e.g., Rosen et al., 1975). Second, care was taken to include measures used in prior research to predict mental health usage (e.g., Bloom, 1976; McWilliams, 1975). Third, measures which were clearly redundant with others were discarded. For example, several economic status measures were eliminated because the redundancy among these variables was high;

the average correlation between median family income and six other income-related measures was .798.

Ten social indicators were selected for the initial analysis: median family income, median housing value, percent in poverty, percent males in high status occupations, percent completing high school, percent divorced, percent female heads of household with own children, percent with Spanish heritage, percent units rented, and percent recent movers. The measures of percent in poverty, percent units rented, and median housing value were found to be highly correlated with median family income, and percent female heads of household showed a high correlation with percent divorced. These four variables were eliminated after the initial analysis because of redundancy.

Survey Measures

The psychological forces acting on the communities served by the center were assessed with selected measures from a psychological survey of 454 catchment area residents (Cappel, 1974; Zautra, 1975; Zautra, Beier & Cappel, in press). The survey utilized a three-stage probability sampling of housing units (approximately 1% of the housing units were sampled). Mean scores for each census tract were computed for each measure selected. Variables were chosen based on their importance in defining Zautra et al.'s (in press) Quality of Life construct and their use in similar research studies. The measures chosen reflect three major community psychology content areas: mental health problems, life satisfactions and participation in the community. The Langner Twenty-two Item Psychiatric Screening Inventory (Langner, 1962) and the Bradburn Negative Affect Scale (Bradburn, 1969) were selected as measures of mental health problems since both scales showed high loadings on a "life crisis"

factor defined by Zautra (1975), and both have been used previously in epidemiological studies of community mental health.

The life satisfactions of residents were assessed by a total quality of life score derived by summing 16 selected items of the Andrews and Withey (in press) Perceived Quality of Life Scale. These items ask for evaluations of oneself, family, work, leisure, standard of living, health, government and other areas of major life concern. Scores on these items were found to load highly on life quality factors (Zautra et al., in press) and to be representative of the major life satisfactions of residents (cf., Campbell, 1976). Bradburn's (1969) Positive Affect Scale was initially included as an additional life satisfaction measure. It was eliminated from further analysis because it was redundant with other measures of psychological forces including negative affect ($r = -.55$), the 22-item scale ($r = -.61$) and total Quality of Life ($r = .77$).

Three separate measures of participation in the community were chosed to represent an "activity" dimension. The Social Participation Scale (Phillips, 1969) was included as a measure of the extent of social relations with neighbors and membership in formal organizations. Religious participation was also assessed by observing whether interviewees mentioned a religious activity in response to open-ended questions about their daily and non-daily activities. Family responsibility was measured by asking residents to report their responsibilities and was coded to reflect the number of family responsibilities mentioned.

Analysis

The social indicators and survey measures were first tested separately with univariate F-tests (Winer, 1971) to investigate the utility of measures of

social and psychological forces in differentiating census tracts based on service utilization rates. For these statistical tests, the 26 census tracts were split into groups with low (n = 8), medium (n = 9) and high (n = 9) service utilization. If several of these variables showed reliable differences across service utilization groups, then the feasibility of planning mental health center programs based on geographically identified needs would be supported (cf., Siegel et al., 1974).

These individual tests, however, do not assess the relative strengths of the different variables in predicting service utilization rates. Six of the social indicators and six survey measures were thus selected for further investigation of their predictive utility. Forward step-wise inclusion (F to enter $\geq$ 1) was employed in three separate regression analyses (Kerlinger & Pedhazur, 1973): one combining both social indicators and survey measures and two investigating the predictive utility of the separate sets of measures. In the step-wise regression procedure the variable with the highest correlation with the criterion (service utilization) is entered first, followed, one at a time, by those variables with the highest correlation with the criterion when the effects of already entered variables are partialed out (Kerlinger & Pedhazur, 1973). The three separate regressions allow tests of whether the combination of social indicators and survey measures adds more to the prediction of service utilization than the use of either set of variables alone.

One additional analysis was performed to test the model of community needs used in this study. This model assumes that social indicators and survey measures identify a similar pattern of need across communities (that is, they show convergent validity). To test this assumption a canonical correlation

was computed between the set of six social indicators and the set of six survey measures. Canonical analysis constructs separate linear combinations of two sets of data which maximize the correlation between the two combinations (Kerlinger & Pedhazur, 1973). This procedure provides an estimate of the convergent validity for social indicators and survey measures by showing the level of association between the two sets of variables.

Results

Table 1 portrays the means and F-ratios for 10 social indicators and the seven survey results across the three levels of client utilization. Each of the ten social indicators differentiated census tracts with low, medium or high usage. The general pattern found was that low affluence, low education levels, low status occupations, high community instability (recent movers and units rented), high family instability (divorce and female heads of household with own children), and high levels of Spanish heritage were associated with high levels of client utilization of services. Higher scores on psychiatric impairment and negative affect and lower ratings of life quality and positive affect were also associated with increased client utilization rates.

Insert Table 1 about here

Non-significant trends were found for lower levels of participation to be associated with increased utilization rates.

Table 2 portrays the step-wise multiple regressions on client utilization. When both social indicators and survey results are employed, the multiple regression coefficient ($R = .883$) employed seven variables which exceeded the inclusion limit and was highly significant ($F\ (7,18) = 9.10$, $p < .001$).[2] This

regression accounts for 78% of the variance in client utilization (Kerlinger & Pedhazur, 1973). Employing this combination of seven social indicators and survey measures also added predictive power beyond the use of either set of variables alone. The summary regression tables for social indicators ($R = .728$; F (1, 24) = 27.03, $p < .01$) and survey measures ($R = .580$; F (2, 23), $p < .02$) are reported in Table 2. The combination of seven social indicators and survey

Insert Table 2 about here

measures was significantly more predictive of service utilization than either social indicators alone (F (6, 18) = 3.40, $p < .05$) or survey results alone (F (5, 17) = 6.83, $p < .01$). While social indicators alone appear to be more predictive than survey measures alone, this may be a result of the minimum 5% household sampling for social indicators compared to the 1% sampling for survey measures. Their combined predictive strengths suggest that mental health planning efforts should be based on as much information as possible when developing or modifying services.

The high intercorrelations among the social indicators made it difficult to identify which indicators were the most important predictors of service utilization. When social indicators alone were regressed onto service utilization, only percent divorce entered the equation. While divorce is a measure of family instability, it also represents the effects of other social forces as demonstrated by the significant correlations ($df = 24$; p's $< .01$) between divorce and median family income ($r = -.71$), high school completion ($r = -.71$), and high status occupations ($r = -.54$). Divorce also correlated significantly ($df = 24$; p's $< .01$) with several survey measures: total quality of life ($r = -.59$), social participation ($r = -.52$), negative affect ($r = -.48$), and family

responsibility (r = -.47). Though an excellent predictor, divorce rates cannot be said to "cause" mental health problems; a high percentage of divorced residents appears to be symptomatic of communities with a wide range of social and psychological problems.

Survey measures seemed to provide more specific findings. The step-wise regression on survey measures alone identified two major predictors, social participation and negative affect. A third major predictor, total quality of life had a similarly strong association (df = 24; p's < .05) with service rates (r = -.45) but did not enter the regression equation because it was also correlated with social participation (r = .40) and negative affect (r = -.45). Psychiatric impairment (r = .324; p < .10) was not as closely associated with service utilization as was negative affect (r = .414; p < .05). Of the three measures of community participation only social participation was significantly related to service utilization (r = -.489; p < .01). Thus, three types of somewhat overlapping survey measures appear to have utility in predicting service utilization: measures of negative affect, quality of life, and social participation.

The results of the canonical analysis is shown in Table 3. The canonical correlation (R = .944) was highly significant (χ^2 (36) = 65.93, p < .002). The proportion of variance accounted for by the first canonical variate was 89%,

Insert Table 3 about here

leaving so little unexplained variance that no further canonical variates were extracted (Kerlinger & Pedhazur, 1973). The large amount of shared variance between the two groups suggests that they did converge on the same model of

shared variance. In replications or extensions of this model, it would be appropriate to choose those variables which seem to be highly predictive of mental health usage (from the step-wise regression) and which best reflect a model of community needs (from the canonical analysis).

Discussion

The results show that patterns of mental health center utilization can be predicted with a great deal of certainty by measuring the geographic distribution of social and psychological forces within the community. The analysis has indicated that these forces are not uniformly distributed. Some areas of the community clearly have fewer social and psychological resources; these same areas also appear to have high risk of mental health problems as reflected by their three year rates of mental health center utilization. The two sets of data also converge providing similar and accurate assessments of the needs for mental health services by different segments of the community. Previous investigators focused on either solely "objective" measures or solely "subjective" measures of community need (Campbell, 1976). The present analysis suggests that the two kinds of measures are complimentary in providing valuable information about public mental health needs.

The social indicator data are particularly useful in mapping the economic and social inequalities of the communities. Of the many indicators of social forces available, geographically based measures of divorce, education level, median family income and racial composition (Spanish heritage) added the most

to predicting mental health utilization for the present study. These indicators were also highly related with other measures such as female heads of household with their own children, high status occupations, poverty and recent movers, which also proved to reliably differentiate patterns of mental health center utilization. Other studies have suggested that social indicators measure a limited number of overlapping social forces (Siegel et al., 1974). The present study also demonstrated that a few social indicators can explain a large proportion of the variance in a measure of community distress such as mental health usage.

These indicators of social forces can be used to locate areas of high mental health need on a geographic basis. By mapping these social inequities, the community mental health center can determine where to focus outreach programs, school and family interventions, and the optimal location of the central unit. These indicators, when matched with service rates, also aid in monitoring whether the center is serving those areas most in need. This provides a very inexpensive solution to current necessities for evaluation of mental health programs and services since a strong correlation between poor social conditions and utilization suggests that programs are, in fact, serving those in need.

While the social indicators identify areas or target groups in need, the survey data help to identify the mental health problems among residents of different areas of the community. Residents of disadvantaged areas generally show more negative affect, less social participation, and lower evaluation of the quality of their lives. Survey results seem to complement the social indicators by providing a psychological understanding of community problems. The social forces working on a community may also translate into psychological

suffering of a kind determined by the particular vulnerabilities of the residents of a given area. A number of studies have shown that environmental stressors seem to increase the likelihood of disease in a population, but the specific medical dysfunction depends on the particular vulnerabilities of the individual (cf., Hinkle, 1974). Similarly, the mental health problems that arise from such an overwhelming and diffuse stressor as poverty may depend upon the neighborhood's predisposition for developing certain kinds of disorders. Mental health problems can vary among individuals, societies and cultures; we suspect they also vary among communities. For example, divorced people in one area could be suffering from the extra burdens of family responsibilities as shown in an earlier study (Zautra et al., in press), but may be more concerned with their needs for closer interpersonal relations in another locale.

Psychological data appears to provide the specificity missing in the "objective" indicators and such information may be particularly helpful in designing specific treatment programs, staffing outreach programs and training of personnel. Survey results can also be useful in evaluations of service utilization by monitoring whether the mental health center provides the kinds of services that people need and request to improve the psychological quality of their lives. The items of the quality-of life and negative affect scales may be of value in measuring the effects of intervention, preventive and direct treatment programs, particularly if a community study has been conducted to provide baseline information. The results of the present study support the use of these measures in view of their utility in predicting mental health needs.

A Comment on Community

Community mental health center utilization can be readily understood and

predicted geographically; these findings suggest that the Granite Community Mental Health Center catchment area may be developing distinct areas with mental health problems. The high usage of services by disadvantaged areas could be explained by differential usage of public and private mental health services. The survey data suggested, however, that these areas are depressed psychologically as well as socially and economically, and Zautra et al. (1976), Bradburn (1969) and Campbell (1976) have shown that income alone does not account for much of the variance in the survey measures used in this study. These areas may require increasing amounts of health, psychological and social services, and the presence of severe social inequities can create multiple-problem neighborhoods which increase the public costs of maintaining the quality of life in other areas as well. These conclusions must remain tentative at this time since comparative data from other communities are not yet available. Nevertheless, the strength of the findings (and their possible consequences) should prompt further study of this phenomenon in Salt Lake county and elsewhere.

These suggested findings can be tentatively interpreted in terms of ideas such as behavioral contagion (LeBon, 1960) or social selection (Turner & Wagenfeld, 1967). Economics undoubtedly play a major role in the selection of a residence, but only longitudinal studies of neighborhoods and of the people who enter them can test how much the social ecology of the community impacts on the people residing there. Psychological forces also may be more susceptible to the influence of the ecology of the neighborhood than social forces. Religious and social participation can be influenced by neighborhood variables (Phillips, 1969), and the measures of affect and life quality may reflect the emotional climate

(Beier, 1966) of the area as well as its economic and social realities. Other than at work, people live out most of their major life concerns within the context of their immediate social environment; the family, public schools, taverns and religious meeting houses often are within neighborhood boundaries. Approaches to the study of community emotional climate similar to that developed by Moos and Houts (1968) for characterizing organizations may be useful in testing the importance of the neighborhood in determining their future needs for mental health services.

Summary

This study tested the potential utility of social indicators and survey data in the prediction of community mental health service utilization and construction of a model of community need. The results showed that both kinds of data are strongly associated with rates of usage across census tracts within the community. The social indicator data appeared to describe the social forces acting with various segments of the community. These forces were inequitably distributed, and disadvantaged areas were most likely to have higher rates of mental health center utilization. It was argued that survey data described psychological forces acting on communities. These data were also highly predictive of mental health utilization rates, although to a lesser extent than the social indicators. The two sets of data were highly convergent and both were seen as useful to planning of mental health services. The social indicators appeared to identify best where to look in the community for high risk populations, while the survey data showed what to look for as mental health problems for the people of a given locale.

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Table 1

Social Indicators and Survey Measures for Census Tracts with Low, Medium and High Rates of Service Utilization

Dependent Variables	Census Tracts Rate			F	p <
	Low[a]	Medium[b]	High[c]	(df=2,23)	
Social Indicators					
Median Family Income	$13067	$10058	$ 8765	13.82	.001
Median House Value	$25637	$18029	$ 14808	9.02	.001
Poverty	4.46%	8.19%	11.21%	8.19	.002
High Status Occupations	45.41%	22.69%	20.89%	15.20	.001
Units Rented	14.55%	20.07%	33.67%	7.20	.004
Recent Movers	17.04%	10.12%	25.47%	9.53	.001
High School Completion	81.76%	64.48%	60.52%	11.26	.001
Divorced	2.66%	3.78%	5.78%	7.45	.003
Female Heads House/ Children	6.84%	7.92%	11.03%	3.91	.035
Spanish Heritage	1.16%	4.86%	4.50%	10.46	.001
Survey Measures					
Psychiatric Impairment	2.32	3.44	3.70	4.16	.029
Total Quality of Life	64.49	58.37	58.98	6.42	.006
Negative Affect	1.83	2.05	2.43	4.90	.017
Positive Affect	4.05	3.58	3.62	3.78	.038
Family Responsibility	1.05	1.02	0.75	1.81	.186
Religious Participation	1.38	1.31	1.25	1.79	.189
Social Participation	2.79	2.54	2.59	0.89	.426

Table 1 - continued

Note. Higher numbers mean higher levels of psychiatric impairment, quality of life, negative affect, positive affect, family responsibility, religious participation or social participation.

[a]Rate = 14.12 to 21.70 clients per 1,000 residents; n = 8.

[b]Rate = 26.19 to 39.30 clients per 1,000 residents; n = 9.

[c]Rate = 39.75 to 191.51 clients per 1,000 residents; n = 9.

Table 2

Summary Table for Step-wise Regressions

on Service Utilization

	Step Variable	Multiple R	R^2	Simple r
Social Indicators and Survey Measures	1. Divorce	.728	.530	.728
	2. Religious Participation	.764	.584	-.209
	3. High School Completion	.789	.622	-.597
	4. Spanish Heritage	.832	.692	.238
	5. Median Family Income	.859	.738	-.526
	6. Psychiatric Impairment	.869	.755	.324
	7. Total Quality of Life	.883***	.780	-.449
Social Indicators Only	1. Divorce	.728**	.530	.728
Survey Measures Only	1. Social Participation	.489	.239	-.489
	2. Negative Affect	.580*	.336	.414

* $p < .02$

** $p < .01$

*** $p < .001$

Table 3

Canonical Analysis of Social Indicators with Survey Measures

Social Indicators	Canonical Beta	Survey	Canonical Beta
High School Completion	-1.065	Total Quality of Life	-.628
Median Family Income	.556	Social Participation	-.326
Divorce	.364	Negative Affect	.266
High Status Occupation	- .087	Religious Participation	-.256
Spanish Heritage	.043	Psychiatric Impairment	-.199
Recent Movers	- .034	Family Responsibility	.012

$R_c = .944$ $R_c^2 = .891$

Footnotes

1. The authors contibuted equally to this research. They wish to acknowledge the assistance and encouragement of Dennis McSharry, Director of Research and Evaluation, Granite Community Mental Health Center. Reprint requests should be sent to Alex Zautra, Dept. of Psychology, Arizona State University, Tempe,Arizona, 85281.

2. Since the number of observations (n=26) is small and seven variables are entered into the regression equation, there could be some problems with interpretation. For the following reasons, the authors would minimize these problems: 1. the R^2 adjusted for small sample size (Kerlinger & Pedhazur, 1973) is .711 which is not significantly less than the reported multiple R^2 of .780, 2. the simple correlations are similar to the multiple correlation in that increased measures of psychological and social forces are associated with increased service utilization, and 3. suppressor effects are probably not present since the first variable entered into the equation is significant and there are no strong discontinuities in the increase in the multiple correlation as variables are entered.